Small-Bowel Intussusception in a Pregnant Woman: A Case Report

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ABSTRACT

Introduction: Intussusception usually is associated with children, rarely with adults.

Case Presentation: A 42-year-old pregnant woman (29 weeks' gestation) reported mild pain in the upper aspect of the abdomen after an intense physical effort. Ultrasound examination found a normally evolving pregnancy and a bowel obstacle, without bowel distention. Because it was not a surgical emergency at the time of evaluation, she was sent to the hospital's Obstetrics Department. The patient's symptoms worsened the next day. Ultrasound examination revealed dilated bowel loops and free fluid. Strangulated epigastric hernia was suspected. Computed tomography was not performed. Exploratory laparotomy revealed a small-bowel intussusception, which was successfully manually reduced, and no leading point was found. Four days later, she delivered a premature baby boy. Two days later the necrotized reduced ileal loop had to be surgically removed because of the patient's altered status. After this procedure, the patient's recovery was uneventful.

Discussion: To our knowledge, this is the first case of small-bowel intussusception in a pregnant woman reported in the literature.

INTRODUCTION

Intussusception is usually associated with children, rarely with adults. When abdominal symptoms are mild, and abdominal imaging results are nonspecific, laparotomy may be the ultimate diagnostic procedure. We report here the case of a pregnant woman with small-bowel intussusception, without a leading point. To our knowledge, it is the first case of intussusception in a pregnant woman ever reported.

CASE PRESENTATION

A 42-year-old white pregnant woman who was 29 weeks pregnant was brought by ambulance to the Emergency Department (ED). She had experienced mild pain in the upper aspect of the abdomen after lifting a heavy barrel. She was a stay-at-home mother.

Presenting Concerns

The main concerns were related to fetal well-being.

The patient was calm and smiling, and she described mild pain in the upper part of the abdomen, which radiated to both flanks. The patient reported nausea and 13 episodes of vomiting, with yellow contents. She still experienced a bitter taste in her mouth. She had passed a normal stool in the previous day, and she reported gas transit. The patient was known to have chronic B hepatitis and normochromic normocytic anemia.

On abdominal palpation, pain was elicited in the entire upper half of the abdomen. An ultrasound examination of the lower half of the abdomen revealed a normally evolving pregnancy, including active fetal movements, fetal heart motion, and placenta adherent to the posterior uterine wall. Ultrasound examination of the upper half of the abdomen revealed images similar to Figures 1 and 2, taken later in the Obstetrics Department: the small-bowel lumen seemed interrupted at a certain point (Figure 1), and intestinal loops had a thicker wall before this (Figure 2; wall edema). Intestinal hypermotility was present before and after the interruption point, and no intestinal distention was seen. No free fluid was present in the peritoneum.

Figure 1. Ultrasound examination of upper half of abdomen showing that small-bowel lumen seems interrupted at a certain point.

Figure 2. Ultrasound examination of upper half of abdomen demonstrating wall edema.

Because of the pregnancy and the patient's mild symptoms, computed tomography (CT) was not performed because the radiation risk for the fetus was considered higher than the potential benefits.

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Figure 3. Computed tomographic examination, axial view, revealing necrotized bowel loop in left iliac fossa.

Figure 4. Computed tomographic examination, sagittal view, showing enlarged uterus and air-fluid levels in small bowel.

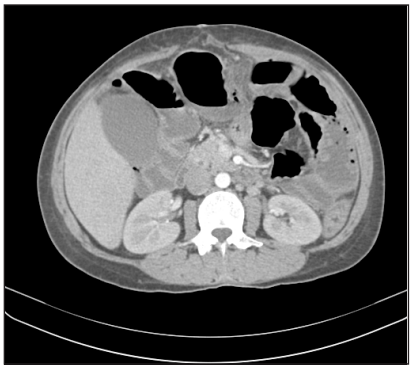

Figure 5. Computed tomographic examination, axial view, with air-fluid levels.

On the same day, Thursday, at 9:30 pm the abdominal surgeon concluded that the abdomen was enlarged because of pregnancy. The abdomen was mobile with breathing and was painful in the upper half. There were no signs of peritoneal irritation. On rectal examination, no alterations were noticed up to 6 cm from the anal end.

Results of the clinical examination and the ultrasound examination revealed no evidence of a surgical emergency, so the patient was referred to the Gastroenterology Department first, then to the Obstetrics Department.

At 10:19 pm the gastroenterologist concluded that it was posttraumatic abdominal pain associated with severe anemia, ordered a complete blood cell count, and sent the patient to the Obstetrics Department. She was admitted to the Obstetrics Department, where another ultrasound examination was performed (Figures 1 and 2), with similar images as a few hours earlier in the ED. The fetus was evaluated at the gestational age of 29 weeks 3 days and a weight of 1428 g. There was a posterior placenta Grade 1, amniotic fluid was normal for gestational age, and the uterine cervix was 25 mm long. Ultrasound examination revealed no surgical emergency. Fetal well-being was established, so the patient was kept under surveillance during the night.

In the Obstetrics Department, blood was collected at 2:20 am on Friday. The patient had A_2 blood type, Rh positive, and the following blood values: white blood cells, 11.39×10^9/L; lymphocytes, 14.93%; middle volume leucocytes, 51.16%; granulocytes, 33.91%; red blood cells, 2.64×10^{12}/L; hemoglobin, 7.4 g/dL; hematocrit, 23.49%; alanine aminotransferase, 12 U/L; aspartate aminotransferase, 19 U/L; creatinine, 0.57 mg/dL; and glucose, 96.2 mg/dL.

During the morning, her upper abdominal pain increased abruptly, and the patient became anxious and started to cry. The patient experienced discomfort during ultrasonographic examination of the upper half of the abdomen. Because the obstetric ultrasound had produced normal results, the patient was returned to the ED.

At 11:30 am an ultrasound examination in the ED showed dilated small-bowel loops up to 38 mm in the upper aspect of the abdomen and a small amount (2- to 3-mm thick) of free fluid in the left iliac fossa. The bowel loops were immobile in the epigastrium, left flank, and left iliac fossa.

At 1 pm surgical palpation revealed an area of rough edema, which had no connection to the pregnant uterus; therefore, it was considered either an epigastric hernia or a hematoma in the rectus abdominis muscles. An ultrasound examination of the epigastric soft tissues was ordered. At 2 pm the soft-tissue ultrasound examination suggested an epigastric hernia, with a 60-mm cervix, a small-bowel loop dilated up to 53 mm inside the hernia, other small-bowel loops inside the abdomen dilated up to 47 mm, and less than 1-cm-thick free fluid between the loops. The small-bowel loops showed few to no movements during the ultrasound examination.

At 2:20 pm the surgeon concluded that this was a surgical emergency: a bowel obstruction due to irreducible epigastric hernia. The patient was admitted to the Surgery Department.

Therapeutic Intervention and Treatment

At 4:15 pm on Friday, the patient underwent an exploratory laparotomy, and an ileo-ileal invagination was discovered. Manual reduction was performed. A drainage tube was placed in the abdomen. Ileal loop viability signs were present. No leading point was found.

The patient was taken to the Intensive Care Unit for recovery. Here she received 10% parenteral glucose serum, saline, nonsteroidal anti-inflammatory drugs, and heparin. She was sent back to the Surgery Department, where she slowly recovered during the next 4 days, but she reported no gas transit and no stool. She was under daily surveillance of a gynecologist, who prescribed her antispasmodic drugs and progestogens.

Four days later, on Tuesday, at 5 am, she vaginally delivered a 1400-g premature baby boy, who breathed spontaneously. The mother was referred to the Obstetrics Department, where the placenta was extracted and instrumental control of the uterine cavity was performed. The infant was brought to the Neonatology Department.

The same day, gas transit was reestablished. At 2:30 pm the surgeon removed the abdominal drainage tube and allowed oral feeding and mobilization of the patient.

On Wednesday at 12:45 a.m., the patient reported pain in the left flank and no gas transit. Still, she later reported passing a stool. Because of the patient's level of education and reluctance to cooperate, obtaining a medical history and updates was difficult. Her abdominal bandage was clean.

At 7 pm the patient's blood pressure was 80/50 mm Hg. Her temperature was normal: 36.5°C. The abdomen was distended. On percussion, it sounded full of gas. No gas transit was reported, and no gas transit was observed through the gas tube. The rectum was empty on examination. At palpation, the postpartum-contracted uterus could be felt. Postoperative intestinal obstruction was suspected. The patient was kept under surveillance. Fluids were parenterally administered.

On Thursday at 6 am, one small stool passed. The patient's status did not improve. Her temperature rose to 37°C. Sepsis was noticed, and peritonitis was suspected. The patient was referred to the ED, then to the Surgery Department.

At 10 pm in the ED she underwent an abdominal plain film and an ultrasonographic examination. Abdominal plain film showed air-fluid levels in the upper aspect of the abdomen and in the left iliac fossa. The ultrasonographic examination revealed small-bowel loops dilated up to 35 mm, and free fluid up to 10 mm thick between the loops. The small-bowel dilated loops showed few movements during the ultrasound examination. At this time, her blood pressure was 130/74 mm Hg. The surgeon recommended a CT scan of the abdomen.

The CT scan (Figures 3 to 5) showed dilated small-bowel loops up to 35 mm, air-fluid levels in the small bowel, and dilated large-bowel loops up to 45 mm. In the left iliac fossa one bowel loop had a thickened wall of 13 mm, with air inside the wall. The length of this portion was 10 cm. Free fluid up to 40 mm thick was noticed around this lesion. The image was suggestive for enteromesenteric infarction. An enlarged postpartum uterus was also noticed.

On Friday morning, after fluid and electrolyte rebalancing through parenteral fluid administration, laparotomy was performed. A necrotized ileal loop, the one previously reduced, was noticed, together with localized peritonitis. Segmental enterectomy with latero-lateral end anastomosis was performed. Histopathologic examination of the specimen revealed enteral transmural infarction, with edema, congestion, and lymphocyte and plasmocyte infiltration in the serosa. No leading point was found.

During the next day, gas transit was reestablished. The patient then passed normal stools. The abdominal plain film had a normal result. She recovered in the

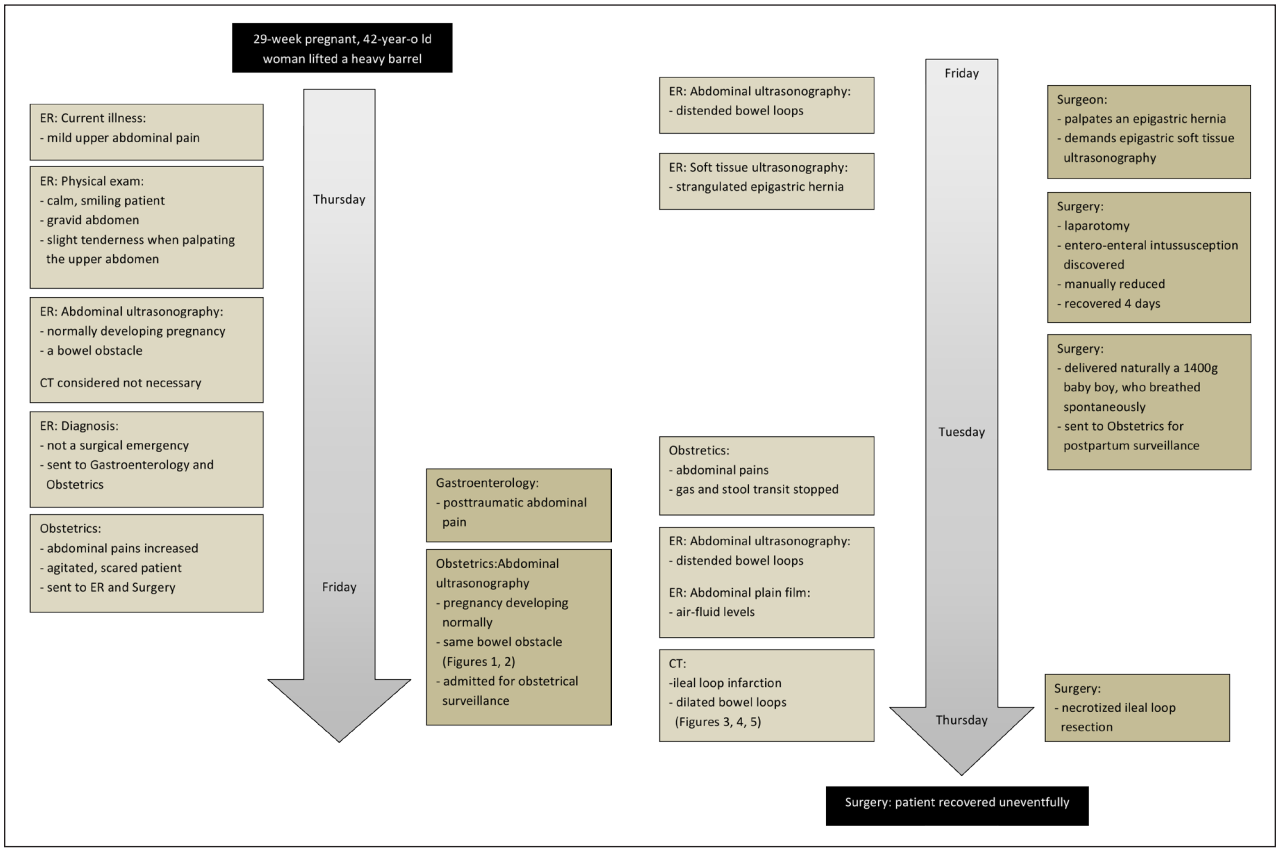

Figure 6. Case timeline.

CT = computed tomography; ER = Emergency Department; US = ultrasonography; Wed, Wednesday.

Surgery Department during the next ten days, and then she was discharged home.

During these 10 days, complete blood cell count showed an increase of the red blood cell count from 2.07×10^{12}/L (3.8-5.2 $\times 10^{12}$/L) in the intervention day to 2.95×10^{12}/L 10 days later. The white blood cell count increased from 2.65×10^{12}/L (4.0-10.0 $\times 10^{12}$/L) to 11.29×10^{12}/L in 5 days, then to 14.71×10^{12}/L in 10 days, because of an infection of the surgical wound. *Escherichia coli* was found, and specific antibiotic therapy was initiated. The case timeline appears in Figure 6.

The infant was admitted to the Neonatology Department with respiratory distress syndrome of medium gravity and was treated with continuous positive pressure ventilation. He also had hypocalcemia and anemia, which were treated with calcium, iron, and erythropoietin. A systolic murmur was noticed. Echocardiography revealed patent foramen ovale. The baby was released from the Neonatology Department 45 days later, when he reached 2400 g, and was transferred to the Pediatric Recovery Department.

Follow-up and Outcomes

The patient was discharged home with the following recommendations: change the gauze dressing daily until complete wound healing, get the metal staples removed on the 15th postoperative day, avoid physical effort for 3 months, and eat a hyperproteic and hypercaloric diet.

The infant was released from the Neonatology Department with the following recommendations to his mother: continue the baby's treatment of anemia with iron, folic acid, and vitamin C; get a cardiac checkup in 2 months; have an otorhinolaryngologic evaluation in 6 months (even if audiometry results were normal); and undergo a neurologic examination in the follow-up center for high-risk neonates of the hospital.

DISCUSSION

Intussusception is rarely seen in adults, and imaging may not be specific. A wide variety of imaging methods can provide some information about intussusception: Plain films, ultrasonography, CT, magnetic resonance imaging, and endoscopy. Of all the imaging methods, CT offers the most accurate diagnosis. Although CT examination is allowed during pregnancy in certain situations when the benefits for the mother's health outweigh the risk to the fetus, the pregnancy in our case was already in the third trimester, and physicians would not risk CT. The woman's initial symptoms were mild, and signs of an emergency were lacking. When the patient's symptoms worsened and an emergency occurred, the diagnosis was solved through ultrasonographic examination, which was faster and clear enough to show distention and immobility of the bowel loops. Magnetic resonance imaging was not available. Laparotomy was the only option for diagnosis and treatment.

Few small-bowel intussusceptions reported in the literature[1] had an identifiable triggering precondition. When found, the leading point was mostly benign and was identified as lipoma or hamartoma. A malignant leading point in small-bowel intussusception was only metastatic.

Although no leading point was found in this case, we consider that the advanced pregnancy, by pushing upward the mobile small bowel, associated with intense physical effort that stressed the abdominal wall muscles, may have provoked the intussusception.

CONCLUSION

In this pregnant patient, with mild abdominal pain, CT was not considered worth the risk to the fetus. However, when pain increased, ultrasonographic examination revealed dilated bowel loops, and clinical examination felt the edema, wrongly considered a strangulated epigastric hernia. The exploratory laparotomy pointed out the real diagnosis: intussusception. After delivery, clinical signs (pain, absence of gas transit) demanded ultrasonography. Dilated bowel loops were found again, and CT was ordered immediately. Neither CT nor histopathologic analysis found any leading point. Although ultrasonographic examination can detect an emergency such as dilated bowel loops or free abdominal fluid, it may not identify the cause as intussusception or strangulated hernia. The use of CT immediately after the first ultrasonographic examination in the ED may have established the intussusception diagnosis earlier, with possible avoiding of the loop necrosis. ❖

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

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